This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.020 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011), updating permit language as appropriate, and adding a flow tier of 0.099 MGD. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260-00 et seq.

1.	Facility Name and Mailing Address:	Lake Anna Environmental Services STP 200 Lake Front Drive, Suite 103 Lake Anna, VA 23117	SIC Code :	4952 WWTP
	Facility Location:	Lake Front Drive Lake Anna, VA 23117	County:	Louisa
	Facility Contact Name:	Mr. Robert Propst	Telephone Number:	(540) 894-8304
2.	Permit No.:	VA0072079	Expiration Date of previous permit:	September 11, 2011
	Other VPDES Permits associated with this facility:		VAN030146 (Nutrient General Permit)	
	Other Permits associated with this facility:		N/A	
	E2/E3/E4 Status:	N/A		
3.	Owner Name:	Lake Anna Environmental Services		
	Owner Contact/Title:	Mr. Robert Propst / Site Supervisor	Telephone Number:	(540) 894-8304
4.	Application Complete Date:	May 17, 2011		
	Permit Drafted By:	Susan Mackert	Date Drafted:	July 6, 2011
	Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	July 26, 2011
	WPM Review By:	Bryant Thomas	Date Reviewed:	August 23, 2011
	Public Comment Period :	Start Date: October 14, 2011	End Date:	November 14, 2011

5. Receiving Waters Information:

Receiving Stream Name :	Lake Anna	Stream Code:	8-NAR
Drainage Area at Outfall:	264.5 square miles	River Mile:	48.03
Stream Basin:	York River	Subbasin:	York
Section:	3	Stream Class:	III
Special Standards:	None	Waterbody ID:	VAN-F07L
7Q10 Low Flow:	NA (discharge to lake)	7Q10 High Flow:	NA (discharge to lake)
1Q10 Low Flow:	NA (discharge to lake)	1Q10 High Flow:	NA (discharge to lake)
30Q10 Low Flow:	NA (discharge to lake)	30Q10 High Flow:	NA (discharge to lake)
Harmonic Mean Flow:	NA (discharge to lake)	30Q5 Flow:	NA (discharge to lake)
303(d) Listed:	Receiving Stream – Yes (fish consumption)		
303(d) Listed:	Downstream – Yes (fish consumption)		
TMDL Approved:	Receiving Stream - No	Date TMDL Approved:	NA
TMDL Approved:	Downstream - No	Date TMDL Approved:	NA

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

✓	State Water Control Law	✓	EPA Guidelines
✓	Clean Water Act	✓	Water Quality Standards
✓	VPDES Permit Regulation	✓	Other - 9VAC25-820 (Nutrient GP)
✓	EPA NPDES Regulation		

7. Licensed Operator Requirements (0.020 MGD): Class IV
Licensed Operator Requirements (0.099 MGD): Class III

8. Reliability Class (0.020 MGD): Class II
Reliability Class (0.099 MGD): Class I

9. Permit Characterization:

✓	Private	✓	Effluent Limited		Possible Interstate Effect
	Federal	✓	Water Quality Limited		Compliance Schedule Required
	State		Toxics Monitoring Program Required		Interim Limits in Permit
	POTW		Pretreatment Program Required		Interim Limits in Other Document
	TMDL				

10. Wastewater Sources and Treatment Description:

The Lake Anna Environmental Services STP is a municipal wastewater treatment plant with a current design capacity of 0.020 MGD. With this reissuance, the facility has asked for an additional flow tier of 0.099 MGD. The facility treats domestic sewage from the Lake Anna Plaza area of Louisa County with a population of approximately 160 served.

The existing facility treats the wastewater using an aerated lagoon system comprised of two lagoons. Each lagoon is divided in to two cells by baffle curtains with diffused air being introduced into the lagoon bottom. Flow from the lagoon system is then pumped to a Bio-Wheel for additional treatment. The Bio-Wheel provides an alternating air and water cycle for a fixed film process and aeration and mixing for the activated sludge process. Effluent from the Bio-Wheel then enters a clarifier prior to chlorine disinfection. The effluent is then dechlorinated with discharge via Outfall 001 to Lake Anna. The outfall is submerged and is located approximately 1055 feet from the shore at an approximate depth of 55 feet.

With the proposed expansion to 0.099 MGD, Lake Anna Environmental Services will construct a new treatment plant keeping the two existing lagoons to serve as flow equalization ponds and the existing outfall structure from the current facility. The new facility is proposed to have screening, a membrane bioreactor single sludge process with biological nutrient removal (BNR), ultraviolet disinfection and post aeration. There is no proposed change to the discharge location.

See Attachment 1a for a facility schematic/diagram of the existing 0.020 MGD flow tier.

See Attachment 1b for a facility schematic/diagram of the proposed 0.099 MGD flow tier.

TABLE 1 – Outfall Description				
Outfall Number	**Discharge Sources**	**Treatment**	**Design Flow**	**Outfall Latitude and Longitude ***
001	Domestic Wastewater	See Item 10 above	0.020 MGD, 0.099 MGD	38° 05' 20.34? N 77° 49' 16.26? W
*The latitude and longitude above differ slightly from what was provided in the permit application as the application coordinates were rounded. The above are the correct coordinates for the outfall location.				
See Attachment 2 for (Lake Anna, DEQ #171D) topographic map.				

11. Sludge Treatment and Disposal Methods:
The solids generated at this facility are transported by Garth Septic Service to the Louisa Regional Wastewater Treatment Plant (VA0067954) in Louisa for final treatment and disposal. The application indicates that approximately 0.2 dry metric tons of solids are generated each year.

12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge: The facilities and monitoring stations listed below either discharge to or are located within a two mile radius of the outfall location in the following waterbody: VAN-F07L

TABLE 2	
8-CON002.32	DEQ lake monitoring station located on the Contrary Creek arm of Lake Anna at the Route 652 bridge crossing.
8-NAR044.68	DEQ lake monitoring station located on Lake Anna approximately 1.69 miles downstream from the Route 208 bridge crossing.
8-NAR047.57*	DEQ semipermeable membrane device (SPMD) station located on Lake Anna approximately 0.38 miles upstream from the Route 208 bridge crossing.
8-NAR047.69	DEQ lake monitoring station located on Lake Anna approximately 0.08 miles upstream from the Route 208 bridge crossing.
8-PGN000.34	DEQ lake monitoring station located on the Pigeon Run arm of Lake Anna approximately 0.79 miles upstream from the Route 208 bridge crossing.
8CON-5-LACA	Lake Anna Civic Association (LACA) monitoring station located on the Contrary Creek arm of Lake Anna approximately 0.1 miles upstream of the Route 652 bridge crossing.
8NAR-4-LACA	Lake Anna Civic Association (LACA) monitoring station co-located with DEQ lake monitoring station 8-NAR044.68 on Lake Anna approximately 1.69 miles downstream from the Route 208 bridge crossing.
8NAR-6-LACA	Lake Anna Civic Association (LACA) monitoring station co-located with DEQ lake monitoring station 8-NAR047.69 on Lake Anna approximately 0.08 miles upstream from the Route 208 bridge crossing.
8NAR-7-LACA	Lake Anna Civic Association (LACA) monitoring station co-located with DEQ lake monitoring station 8-PGN000.34 on the Pigeon Run arm of Lake Anna approximately 0.79 miles upstream from the Route 208 bridge crossing.
VA0052451	Dominion – North Anna Power Station (Lake Anna)

*Semipermeable membrane devices (SMPD) were deployed in Lake Anna in 2004 to perform water column PCB sampling.

13. Material Storage:

TABLE 3 - Material Storage		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
Calcium Hypochlorite (70%) Tablets	1 – 2 Five Gallon Buckets	Covered Storage
Sodium Sulfite (92%) Tablets	1 – 2 Five Gallon Buckets	Covered Storage

14. Site Inspection: Performed by Susan Mackert and Bryant Thomas on February 23, 2011. The site visit confirms that the application packages received on March 17, 2011, and May 2, 2011, are accurate and representative of actual site conditions. The site visit memo can be found as Attachment 3.

15. Receiving Stream Water Quality and Water Quality Standards:

a) Ambient Water Quality Data

DEQ and Lake Anna Civic Association (LACA) monitoring stations located within a two mile radius of the discharge location are listed in Table 2 (page three of this Fact Sheet). The receiving stream, Lake Anna, is listed on the current 303(d) list. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The aquatic life, recreation, and wildlife uses are considered fully supporting.

The 2010 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report (IR) gives an impaired classification for the following in Lake Anna.

- Fish Consumption Use Impairment

Lake Anna: The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The advisory, dated 6/14/04, and modified 12/13/04 and 8/31/07, limits bluegill sunfish, carp, channel catfish, largemouth bass, striped bass, white catfish, and white perch consumption to no more than two meals per month. The advisory also bans the consumption of gizzard shad. The affected area includes the entirety of Lake Anna and its tributaries Contrary Creek, Gold Mine Creek, and Terry's Run.

Lake Anna (downstream): A downstream portion of Lake Anna is listed as impaired because of mercury in fish tissue. Excursions above the fish tissue value (TV) of 300 ppb for mercury in fish tissue were recorded in one specie of fish (carp) sampled in 2003 and in one specie of fish (channel catfish) sampled in 2006 at monitoring station 8-NAR034.92. These exceedances indicate an impaired fish consumption use for mercury.

The full planning statement can be found in the reissuance file.

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the 2010 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories [wastewater, urban storm water, onsite/septic agriculture, air deposition]. Fact Sheet Section 17.e provides additional information on specific nutrient limitations for this facility to implement the provisions of the Chesapeake Bay TMDL.

b) Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Lake Anna, is located within Section 3 of the York River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

Attachment 4d details other water quality criteria applicable to the receiving stream.

Ammonia:
The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream. During the previous reissuance of the permit, staff utilized ambient data (2002 – 2005) from DEQ Water Quality Monitoring Station 8-NAR037.22 to determine the 90th percentile temperature and pH values (Attachment 4a). These values are shown below in Table 4.

TABLE 4 –
Ambient pH and Temperature Values (90th Percentile) – 2006 Reissuance

Data Set	pH	Temperature
2002 - 2005	7.7 S.U.	31ºC

With this reissuance staff re-evaluated the receiving stream ambient monitoring data for pH and temperature from DEQ Water Quality Monitoring Station 8-NAR037.22. No additional monitoring data has been recorded at this station since 2005. It is staff's best professional judgement that this old data should not be utilized to calculate the Water Quality Criteria. As such, staff evaluated receiving stream ambient monitoring data for pH and temperature from DEQ Water Quality Monitoring Station 8-NAR047.69, which is located on Lake Anna approximately 0.08 miles upstream from the Route 208 bridge crossing, to determine the 90th percentile temperature and pH values (Attachment 4b). These values, shown below in Table 5, are not significantly different than those used during the previous reissuance.

TABLE 5 –
Ambient pH and Temperature Values (90th Percentile) – 2011 Reissuance

Data Set	pH	Temperature
2006 - 2010	7.8 S.U.	29ºC

Guidance Memo 00-2011 does not allow mixing zones in lakes unless the permittee provides actual physical/chemical data to demonstrate acceptable conditions both within the mixing zone and the Lake as a whole. In the absence of such data, criteria "end-of-pipe" limits are recommended for toxic parameters such as ammonia (Attachment 4c). Because the facility has not completed a study to establish dilution factors or a mixing zone, no dilution is allowed.

In cases where there no dilution is allowed, effluent pH and temperature data are used to establish the ammonia water quality criteria. A 90th percentile value of 7.46 S.U. was derived for the effluent pH by utilizing reported discharge monitoring data from October 2006 to May 2011. The facility is not required to monitor temperature so no effluent temperature data is available. It is staff's best professional judgement that a default value of 25° C be used. The ammonia water quality standards calculations are shown in Attachment 4d.

TABLE 6 –
Effluent pH and Default Temperature Values (90th Percentile) –
2011 Reissuance

Data Set	pH	Temperature
2006 - 2010	7.46 S.U.	25ºC

Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's hardness (expressed as mg/L calcium carbonate). There is no hardness data for this facility. Staff guidance suggests using a default hardness value of 50 mg/L $CaCO_3$ for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 4a and Attachment 4b are based on this default value.

Bacteria Criteria:
The Virginia Water Quality Standards at 9VAC25-260-170 A state that the following criteria shall apply to protect primary recreational uses in surface waters:

1) *E. coli* per 100 ml of water shall not exceed a monthly geometric mean of the following:

	Geometric Mean[1]
Freshwater *E. coli* (N/100 ml)	126

[1]For a minimum of four weekly samples [taken during any calendar month].

Nutrient Criteria for Lakes and Reservoirs:
The Virginia Water Quality Standards (9VAC25-260-187) establish nutrient criteria for man-made lakes and reservoirs to protect aquatic life and recreational designated uses. Chlorophyll a criteria are established for all individual water bodies identified in the regulation. In lakes and reservoirs that receive algicide application to manage public water supply sources, the total phosphorus criteria are also applicable. The nutrient criteria for lakes and reservoirs apply at the surface (depth of one meter or less) within the lacustrine portion of the water body between April 1 and October 31. The extent of the lacustrine portion of Lake Anna extends from the lower lake area near the dam upstream to approximately rivermile 45.38 (0.7 rivermiles upstream from DEQ monitoring station 8-NAR044.68).

Lake Anna is considered a cold water fishery with an effective chlorophyll a criterion of 25 ug/L. Additionally, Lake Anna has not been designated as a public water supply and as such, no algicides are applied. Thus, the total phosphorus criteria are not applicable.

c) Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Lake Anna, is located within Section 3 of the York River Basin. This section has not been designated with any special standards.

d) Threatened or Endangered Species

The Virginia DGIF Fish and Wildlife Information System Database was searched on July 5, 2011, for records to determine if there are threatened or endangered species in the vicinity of the discharge. The following threatened or endangered species were identified within a 2 mile radius of the discharge: Upland Sandpiper, Loggerhead Shrike, Bald Eagle, Green Floater, and the Migrant Loggerhead Shrike. The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and protect the threatened and endangered species found near the discharge.

16. Antidegradation (9VAC25-260-30):

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 because of the water quality impairments noted for the fish consumption beneficial use. The limits developed for both the 0.020 MGD and 0.099 MGD flow tiers protect the Water Quality Standards of Lake Anna.

Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a) Effluent Screening:
Effluent data obtained from DMR submissions dated October 2006 – May 2011 has been reviewed and determined to be suitable for evaluation.

The following pollutants require a wasteload allocation analysis*:* Ammonia and Chlorine.

b) Mixing Zones and Wasteload Allocations (WLAs):
Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{C_o [Q_e + (f) (Q_s)] - [(C_s) (f) (Q_s)]}{Q_e}$$

Where:
- WLA = Wasteload allocation
- C_o = In-stream water quality criteria
- Q_e = Design flow
- Q_s = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- C_s = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10 and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the C_o.

c) Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D. requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N:

Because no dilution is allowed, effluent pH and temperature data were used to establish the ammonia water quality criteria. A 90th percentile effluent pH value of 7.46 S.U. and a default temperature value of 25° C were used to re-calculate new ammonia water quality criteria, new wasteload allocations (WLAs) and new ammonia limits (Attachment 4d). Current DEQ guidance recommends utilizing a sole data point of 9.0 mg/L to ensure the evaluation adequately addresses the potential for ammonia to be present in discharges containing domestic sewage.

Using the above data, a monthly average ammonia limitation of 4.6 mg/L and a weekly average ammonia limitation of 4.6 mg/L were calculated for the discharge (Attachment 4d). Antibacksliding provisions do not allow relaxation of limitations. As such, the existing monthly average limitation of 4.1 mg/L and the weekly average limitation of 4.1 mg/L shall be carried forward (Attachment 4a).

2) TKN:

0.099 MGD Flow Tier
The facility will be given a year round TKN limit of 3.0 mg/L. A TKN limit of 3.0 mg/L assumes that the remaining nitrogen is in the form of refractory organic compounds that will not be easily oxidized and that ammonia is removed when the 3.0 mg/L TKN limit is met. The weekly average limit will be 4.5 mg/L based on a multiplier of 1.5 times the monthly average. The proposed TKN limits in this draft permit are protective of the Virginia Water Quality Standards.

3) Total Residual Chlorine (TRC):

0.020 MGD Flow Tier

Chlorine is used for disinfection at the 0.020 MGD flow tier and is potentially in the discharge. Staff calculated WLAs for TRC using current critical flows. In accordance with current DEQ guidance, staff used a default data point of 0.2 mg/L and the calculated WLAs to derive limits.

A monthly average limitation of 0.009 mg/L and a weekly average limitation of 0.012 mg/L were developed for this discharge (Attachment 4a). Antibacksliding provisions do not allow relaxation of limitations. As such, the existing monthly average limitation of 0.008 mg/L and the weekly average limitation of 0.010 mg/L shall be carried forward with this reissuance (Attachment 4c).

0.099 MGD Flow Tier

Total Residual Chlorine limitations were not developed for the 0.099 MGD flow tier as the proposed expansion includes ultraviolet disinfection.

d) Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

1) 0.020 MGD Flow Tier

No changes to dissolved oxygen (D.O.), biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), and pH limitations are proposed.

BOD_5 and TSS limitations are based on 40 CFR Part 133 (Secondary Treatment Regulation).

Dissolved Oxygen limitations are based on best professional judgement. A minimum limit of 5.0 mg/L was implemented with the previous reissuance to protect the Lake Anna fishery. This is consistent with the daily average D.O. criteria in the Water Quality Standards 9VAC25-260-50.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170. Because of the recreational significance of Lake Anna, monitoring is appropriate to ensure adequate disinfection of the effluent.

2) 0.099 MGD Flow Tier

A monthly average $CBOD_5$ limitation of 10 mg/L is proposed with this reissuance. Because no dilution is being allowed, this limit is based on best professional judgement and Guidance Memo 00-2011 which recommends effluent limitations should be of such quality to essentially be self-sustaining. A weekly average limitation of 15 mg/L is proposed based on a multiplier of 1.5 times the monthly average.

It is staff's practice to equate the Total Suspended Solids limits with the $CBOD_5$ limit since the two pollutants are closely related in terms of treatment of domestic sewage. Therefore, a monthly average TSS limitation of 10 mg/L is proposed with this reissuance. A weekly average limitation of 15 mg/L is proposed based on a multiplier of 1.5 times the monthly average.

Dissolved Oxygen limitations are based on best professional judgement to protect the Lake Anna fishery. A limit of 5.0 mg/L was implemented at the 0.020 MGD flow tier with the previous reissuance to protect the Lake Anna fishery which is consistent with the daily average D.O. criteria in the Water Quality Standards 9VAC25-260-50. This limit is also appropriate for the 0.099 MGD flow tier to protect the Lake Anna fishery.

pH limitations are set at the water quality criteria.

E. coli limitations are in accordance with the Water Quality Standards 9VAC25-260-170.

e) 0.099 MGD Flow Tier Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. There are three regulations that necessitate the inclusion of nutrient limitations when the facility expands to 0.099 MGD

- 9VAC25-40 - *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* requires new or expanding discharges with design flows of ≥0.04 MGD to treat for TN and TP to either BNR levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

- 9VAC25-720 – *Water Quality Management Plan Regulation* sets forth TN and TP maximum wasteload allocations for facilities designated as significant discharges, i.e., those with design flows of ≥0.5 MGD above the fall line and ≥0.1 MGD below the fall line. This regulation limits the total nitrogen and total phosphorus mass loadings from these discharges.

- 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* became effective January 1, 2007. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN030146.

Monitoring for Nitrates + Nitrites, Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus are included in this permit. The monitoring is needed to protect the Water Quality Standards of the Chesapeake Bay. Monitoring frequencies are set at the frequencies set forth in 9VAC25-820. Annual average effluent limitations, as well as monthly and year to date calculations, for Total Nitrogen and Total Phosphorus are included in this individual permit. The annual averages are based on 9VAC25-40 and GM07-2008. The annual averages are based on the offset plan submitted as part of the Registration Statement for 9VAC25-820. The facility will be able to self-offset the established Total Nitrogen and Total Phosphorus annual averages based on the design of the proposed treatment facility and as such will not need to obtain additional offsets from other sources. Please see Section 28 of the Fact Sheet for a description of Total Nitrogen and Total Phosphorus annual average derivation for the 0.099 MGD flow tier.

The Virginia Water Quality Standards (9VAC25-260-187) establish nutrient criteria for man-made lakes and reservoirs to protect aquatic life and recreational designated uses. Because there have been no observed nutrient enrichment concerns noted in Lake Anna in the lacustrine portion of the Lake, or in proximity to the discharge, no nutrient effluent limits or additional controls are proposed under the current design flow of the facility. As discussed in Section 15 of this Fact Sheet, nutrient offsets through installation of nutrient removal technology is required in order to ensure protection of the downstream beneficial uses of the Chesapeake Bay. The performance levels of nutrient controls at the 0.099 MGD flow tier, 3.8 mg/L total nitrogen and 0.5 mg/L of total phosphorus, are close to state-of-the-art limits of technology. Accordingly, these effluent limits are also considered protective of local water quality conditions at the higher flow tier.

f) Effluent Limitations and Monitoring Summary.

The effluent limitations are presented in the following table. Limits were established for Flow, BOD_5, CBOD, Total Suspended Solids, Ammonia as N, pH, Dissolved Oxygen, Total Residual Chlorine, *E. coli*, TKN, Total Nitrogen (calendar year), and Total Phosphorus (calendar year).

The limit for Total Suspended Solids is based on Best Professional Judgement.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD and TSS (or 65% for equivalent to secondary). At the 0.020 MGD flow tier, the permit requires influent BOD and TSS monitoring on an annual basis to demonstrate 85% removal. At the 0.099 MGD flow tier, permit limits are water-quality-based and will result in greater than 85% removal.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19a. Effluent Limitations/Monitoring Requirements: Outfall 001

Design flow is 0.020 MGD

Effective Dates: During the period beginning with the permit's effective date and lasting until the issuance of the CTO for the 0.099 MGD facility or until the expiration date, whichever comes first.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/D	Estimate
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
BOD_5	1,3	30 mg/L 2.3 kg/day	45 mg/L 3.4 kg/day	NA	NA	1/M	Grab
Total Suspended Solids (TSS)	1	30 mg/L 2.3 kg/day	45 mg/L 3.4 kg/day	NA	NA	1/M	Grab
Dissolved Oxygen (DO)	2,3	NA	NA	5.0 mg/L	NA	1/D	Grab
Ammonia, as N (mg/L)	3	4.1 mg/L	4.1 mg/L	NA	NA	1/M	Grab
E. coli (Geometric Mean)	2,3	126 n/100mls	NA	NA	NA	1/W	Grab
Total Residual Chlorine (after contact tank)	2,3,4	NA	NA	1.0 mg/L	NA	1/D	Grab
Total Residual Chlorine (after dechlorination)	3	0.008 mg/L	0.010 mg/L	NA	NA	1/D	Grab
Influent BOD_5[(b)]	1	NL mg/L	NA	NA	NA	1/YR[(a)]	Grab
Influent Total Suspended Solids (TSS)[(b)]	1	NL mg/L	NA	NA	NA	1/YR[(a)]	Grab

The basis for the limitations codes are:

1. Federal Effluent Requirements 40 CFR Part 133
2. Best Professional Judgement
3. Water Quality Standards
4. DEQ Disinfection Guidance

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.

1/D = Once every day.
1/W = Once every week between 10am and 4pm.
1/M = Once every month.
1/YR = Once every year.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.
Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. The annual monitoring period shall be January 1 through December 31. The DMR shall be submitted no later than the 10th day of the month following the monitoring period.

b. The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for BOD and TSS. This permit requires influent BOD and TSS monitoring on an annual basis to demonstrate 85% removal.

19b. Effluent Limitations/Monitoring Requirements: Outfall 001

Design flow is 0.099 MGD

Effective Dates: During the period beginning with the issuance of the CTO for the 0.099 MGD facility and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	3	NA	NA	6.0 S.U.	9.0 S.U.	1/D	Grab
$CBOD_5$	3	10 mg/L 3.7 kg/day	15 mg/L 5.6 kg/day	NA	NA	1/W	4H-C
Total Suspended Solids (TSS)	2	10 mg/L 3.7 kg/day	15 mg/L 5.6 kg/day	NA	NA	1/W	4H-C
DO	2,3	NA	NA	5.0 mg/L	NA	1/D	Grab
Total Kjeldahl Nitrogen (TKN)	3	3.0 mg/L	4.5 mg/L	NA	NA	1/W	4H-C
E. coli (Geometric Mean)	3	126 n/100mls	NA	NA	NA	2D/W	Grab
Nitrate+Nitrite, as N	3,4	NL mg/L	NA	NA	NA	1/W	4H-C
Total Nitrogen [a.]	3,4	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen – Year to Date [b.]	3,4	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen - Calendar Year [b.]	3,4	3.8 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	3	NL mg/L	NA	NA	NA	1/M	4H-C
Total Phosphorus – Year to Date [b.]	3,4	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus - Calendar Year [b.]	3,4	0.5 mg/L	NA	NA	NA	1/YR	Calculated

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgement
3. Water Quality Standards
4. 9VAC25-40 (Nutrient Regulation)

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
1/W = Once every week.
2D/W = Two days per week, between 10am and 4pm.
1/M = Once every month.
1/YR = Once per year.

4H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 4-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of four (4) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum four (4) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by =10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15-minutes.

a. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite

b. See Section 20.a. for the calculation of the Nutrient Calculations.

20. Discharge Pipe Integrity Inspection and Repair Plan:

With the last reissuance the facility was required to develop a Discharge Pipe Integrity Inspection and Repair Plan to ensure proper operation and maintenance of the discharge structure to Lake Anna. The plan was to include a schedule for visual underwater inspections of the discharge pipe, identification of contractual engineering sources that could be employed for the inspection, and if necessary, for the repair of the discharge pipe; and a plan to contract emergency repair services if the integrity of the discharge pipe had been compromised. The plan was submitted to the DEQ Northern Regional Office on March 20, 2007, and was approved on April 9, 2007.

A key component of the plan was the requirement for visual underwater inspections of the discharge pipe within one year of the reissuance of the permit and again within six months of the deadline for submitting the application for reissuance. Because of the recreational significance of Lake Anna, annual visual underwater inspections of the discharge pipe are proposed with this reissuance. The annual inspections shall be conducted no later than May 20 of each year to verify discharge pipe integrity prior to the start of the traditional recreation season.

An annual report detailing the findings of the underwater visual inspection shall be submitted to the DEQ Northern Regional Office on or before June 30th of every year. This report shall include, but is not limited to:

- A detailed summary of the findings from the visual underwater inspection of the discharge pipe conducted during the current year;
- A summary of any pending repairs and/or rehabilitation projects as a result of the completed visual underwater inspection of the discharge pipe ; and
- A summary of completed repairs and/or rehabilitation projects to the discharge pipe from the previous year.

The permittee shall submit for review and approval a revision to the Discharge Pipe Integrity Inspection and Repair Plan originally approved on April 9, 2007. The revision shall be submitted to the DEQ Northern Regional Office no later than Month - Day, 2011/2012. The revision shall include, at a minimum, the requirement for annual visual underwater inspections of the discharge pipe and annual report submittal. Until such time as the Discharge Pipe Integrity Inspection and Repair Plan revision is approved, the facility shall continue to abide by the existing Discharge Pipe Integrity Inspection and Repair Plan approved on April 9, 2007. Any future changes to the plan must be submitted to the DEQ Northern Regional Office for review and approval at least 60 days prior to the change. Non-compliance with the Discharge Pipe Integrity Inspection and Repair Plan shall be deemed a violation of the permit.

21. Lagoon Liner Integrity and Groundwater Monitoring Plan:

With the last reissuance the facility was required to develop a Lagoon Liner Integrity and Groundwater Monitoring Plan. The plan was to provide a protocol for monitoring groundwater impacts due to potential leakage from the facility's two lagoons. The plan was submitted to the DEQ Northern Regional Office on March 5, 2007, and was approved on April 9, 2007.

A key component of the plan was the commitment to sample the dewatering system of each lagoon on a semi-annual basis for *E. coli*. The plan did not define the semi-annual monitoring period or a time frame for submittal of sampling results. With this reissuance the semi-annual monitoring periods shall be defined as January 1 – June 30 and July 1 – December 31 with sampling results due no later than the 10th of the month following the monitoring period (July 10 and January 10, respectively).

The permittee shall submit for review and approval a revision to the Lagoon Liner Integrity and Groundwater Monitoring Plan originally approved on April 9, 2007. The revision shall be submitted to the DEQ Northern Regional Office no later than Month - Day, 2011/2012. The revision shall include, at a minimum, the monitoring periods and applicable reporting dates. Until such time as Lagoon Liner Integrity and Groundwater Monitoring Plan revision is approved, the facility shall continue to abide by the existing Lagoon Liner Integrity and Groundwater Monitoring Plan approved on April 9, 2007.

If monitoring results indicate contaminated ground water due to leakage from the facility's lagoons, the permittee shall submit a corrective action plan within 60 days of being notified by the regional office. The plan shall set forth the steps to be taken by the permittee to ensure that the contamination source is eliminated or that the contaminant plume is contained on the permittee's property. In addition, based on the extent of contamination, a risk analysis may be required. Once approved, this plan and/or analysis shall become an enforceable part of this permit.

22. Other Permit Requirements:

a) Part I.B. of the permit contains additional chlorine monitoring requirements, quantification levels and compliance reporting instructions.
These additional chlorine requirements are necessary per the Sewage Collection and Treatment Regulations at 9VAC25-70 and by the Water Quality Standards at 9VAC25-260-170. A minimum chlorine residual must be maintained at the exit of the chlorine contact tank to assure adequate disinfection. No more that 10% of the monthly test results for TRC at the exit of the chlorine contact tank shall be <1.0 mg/L with any TRC <0.6 mg/L considered a system failure. Monitoring at numerous STPs has concluded that a TRC residual of 1.0 mg/L is an adequate indicator of compliance with the *E. coli* criteria. *E. coli* limits are defined in this section as well as monitoring requirements to take effect should an alternate means of disinfection be used.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

The calculations for the Nitrogen and Phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits.

23. Other Special Conditions:

a) 95% Capacity Reopener. The VPDES Permit Regulation at 9VAC25-31-200.B.4. requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. The facility is a PVOTW.

b) Indirect Dischargers. Required by VPDES Permit Regulation, 9VAC25-31-200 B.1. and B.2. for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

c) O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall submit for approval a revised Operations and Maintenance (O&M) Manual or a statement confirming the accuracy and completeness of the current O&M Manual to the Department of Environmental Quality, Northern Regional Office (DEQ-NRO) by Month - Day, 2011/2012. Future changes to the facility must be addressed by the submittal of a revised O&M Manual within 90 days of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d) CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

e) Financial Assurance. Required by Code of Virginia §62.1.-44.18:3 and the Board's Financial Assurance Regulation, 9VAC25-650-1, et seq. which requires owners and operators of PVOTWs with a design flow >0.005 MGD but <0.040 MGD and treating sewage from private residences to submit a closure plan and maintain adequate financial assurance in the event the facility ceases operations. The permitted facility is a PVOTW with a design flow of 0.020 MGD, and treats sewage generated from private residences.

f) Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and Rules and Regulations for Waterworks and Wastewater Works Operators (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class IV operator at the 0.020 MGD flow tier. Upon issuance of the CTO for the 0.099 MGD flow tier, a Class III operator shall be required.

g) Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. Overflow criteria, such as period of discharge, are utilized solely for the establishment of reliability classification for design purposes and are not to be construed as authorization for or defense of an unpermitted discharge to state waters. The treatment works design shall provide for satisfactory operation during power failures, flooding, peak loads, equipment failure, and maintenance shut-down (in accordance with the requirements of the appropriate reliability class). Such design features include: (i) additional electrical power sources; (ii) additional flow storage capacity; and (iii) additional treatment unit operations, that provide for alternate operation in accordance with the issued certificate permit requirements.
The facility is required to meet a reliability Class of II at the 0.020 MGD flow tier. Upon issuance of the CTO for the 0.099 MGD flow tier, the facility shall be required to meet a reliability Class of I.

h) Pump Station Reliability. Within 180 days of the effective date of the permit (Month-Day, 2011/2012), the permittee shall submit to the Northern Regional Office a plan and schedule to upgrade the two existing pump stations to Reliability Class I.

i) Water Quality Criteria Monitoring. State Water Control Law §62.1-44.21 authorizes the Board to request information needed to determine the discharge's impact on State waters. States are required to review data on discharges to identify actual or potential toxicity problems, or the attainment of water quality goals, according to 40 CFR Part 131, Water Quality Standards, subpart 131.11. To ensure that water quality criteria are maintained, the permittee is required to analyze the facility's effluent for the substances noted in Attachment A of this VPDES permit at the 0.099 MGD flow tier.

j) Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.

k) Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

l) Treatment Works Closure Plan. The State Water Control Law §62.1-44.15:1.1, makes it illegal for an owner to cease operation and fail to implement a closure plan when failure to implement the plan would result in harm to human health or the environment. This condition is used to notify the owner of the need for a closure plan where a facility is being replaced or is expected to close.

m) Discharge Pipe Integrity Inspection and Repair Plan. The permittee shall submit for review and approval a revision to the Discharge Pipe Integrity Inspection and Repair Plan originally approved on April 9, 2007. The revision shall be submitted to the DEQ Northern Regional Office no later than Month - Day, 2011/2012. The revision shall include, at a minimum, the requirement for annual visual underwater inspections of the discharge pipe and annual report submittal. Until such time as the Discharge Pipe Integrity Inspection and Repair Plan revision is approved, the facility shall continue to abide by the existing Discharge Pipe Integrity Inspection and Repair Plan approved on April 9, 2007. Any future changes to the plan must be submitted to the DEQ Northern Regional Office for review and approval at least 60 days prior to the change. Non-compliance with the Discharge Pipe Integrity Inspection and Repair Plan shall be deemed a violation of the permit.

n) Lagoon Liner Integrity and Groundwater Monitoring Plan. The permittee shall submit for review and approval a revision to the Lagoon Liner Integrity and Groundwater Monitoring Plan originally approved on April 9, 2007. The revision shall be submitted to the DEQ Northern Regional Office no later than Month - Day, 2011/2012. The revision shall include, at a minimum, the monitoring periods and applicable reporting dates. Until such time as Lagoon Liner Integrity and Groundwater Monitoring Plan revision is approved, the facility shall continue to abide by the existing Lagoon Liner Integrity and Groundwater Monitoring Plan approved on April 9, 2007. Any future changes to the plan must be submitted to the DEQ Northern Regional Office for review and approval at least 60 days prior to the change. Non-compliance with the Lagoon Liner Integrity and Groundwater Monitoring Plan shall be deemed a violation of the permit. If monitoring results indicate contaminated ground water due to leakage from the facility's lagoons, the permittee shall submit a corrective action plan within 60 days of being notified by the regional office. The plan shall set forth the steps to be taken by the permittee to ensure that the contamination source is eliminated or that the contaminant plume is contained on the permittee's property. In addition, based on the extent of contamination, a risk analysis may be required. Once approved, this plan and/or analysis shall become an enforceable part of this permit.

o) Nutrient Reopener. 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

p) E3/E4. 9VAC25-40-70 B authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

Permit Section Part II. Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

24. Changes to the Permit from the Previously Issued Permit:

a) Special Conditions:

1. The Nutrient Enriched Waters Reopener was removed with this reissuance and replaced with a Nutrient Reopener special condition.
2. The Lake Monitoring Plan special condition was removed with this reissuance as a significant number of monitoring stations exist in the vicinity of the outfall location and elsewhere on Lake Anna.
3. A Financial Assurance special condition was added with this reissuance.
4. An additional statement has been added to the Licensed Operator Requirement special condition that upon issuance of the CTO for the 0.099 MGD flow tier a Class III operator shall be required.
5. An additional statement has been added to the Reliability Class special condition that upon issuance of the CTO for the 0.099 MGD flow tier the facility shall be required to meet a reliability Class of I.
6. The complete definition of reliability was added to the Reliability Class special condition to provide clarification.
7. A Pump Station Reliability Class special condition was added with this reissuance.
8. The E3/E4 special condition was added to the permit because Total Nitrogen or Total Phosphorus annual average concentration limits are included in the permit at the 0.099 MGD flow tier.

b) Monitoring and Effluent Limitations:

1. A new flow tier of 0.099 MGD has been added to the permit with this reissuance.
2. Monitoring and effluent limitations have been added to the permit for the 0.099 MGD flow tier with this reissuance.
3. Requirements for the *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia* have been added to the permit for the 0.099 MGD flow tier.
4. At the 0.020 MGD flow tier, the maximum *E. coli* limitation of 235 n/Cml has been revised to a monthly geometric mean limitation of 126 n/100 mls.
5. At the 0.020 MGD flow tier, the sampling frequency for *E. coli* has been increased from 1/M to 1/W in accordance with the current agency guidance.

25. Variances/Alternate Limits or Conditions: N/A

26. Public Notice Information:

First Public Notice Date: October 13, 2011 Second Public Notice Date: October 20, 2011

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3853, susan.mackert@deq.virginia.gov. See Attachment 5 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit;

and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

27. 303 (d) Listed Stream Segments and Total Max. Daily Loads (TMDL):

The receiving stream, Lake Anna, is listed on the current 303(d) list. The fish consumption use is categorized as impaired due to Virginia Department of Health, Division of Health Hazards Control, PCB and mercury fish consumption advisories. The aquatic life, recreation, and wildlife uses are considered fully supporting.

A preliminary 2012 Assessment for Lake Anna's aquatic life use is considered fully supporting. The assessment utilizes both DEQ data and LACA Level III data.

TABLE 6 – Aquatic Life Use		
Nutrients (Lacustrine Zone)	Fully Supporting	
DO (Whole Lake)	Fully Supporting	4.4% Exceedance Rate
pH (Whole Lake)	Fully Supporting	0.4% Exceedance Rate

All pH exceedances were noted in the arms of Lake Anna (Pamunkey Arm, Terry's Run Arm, and Contrary Creek). None were in the vicinity of or downstream of the Rt. 208 bridge crossing which is located in close proximity to the Lake Anna Environmental Services STP outfall location.

The vast majority of DO exceedances were found in the deeper parts of lake, all at deeper depths (usually at or more than ten meters in depth). The station closest to the Route 208 Bridge (8-NAR047.69) showed 22 exceedances of the DO criterion, scattered throughout 2006, 2007, 2008, 2009, and 2010. These exceedances were all found at depths of 8 to 11 meters. The closest downstream station to the Route 208 Bridge (8-NAR044.68) showed 8 exceedances of the DO criterion found in 2005 and 2007. These exceedances were all found at lower depths which is indicative of naturally occurring stratification in lakes and impoundments. The only arm of Lake Anna with DO exceedances was the Pamunkey Creek arm at Station 8-PMC002.13.

TMDL Reopener: This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

28. Total Nitrogen and Total Phosphorus Annual Averages:

Total Nitrogen and Total Phosphorus annual averages at the 0.099 MGD flow tier were calculated using a permitted design capacity based on the existing 0.020 MGD flow. Permitted design capacity means the allowable load (pounds per year) assigned to an existing facility that is a non-significant discharger (less than 0.5 MGD above the fall line) that does not have a wasteload allocation listed in the Water Quality Management Plan regulation (9VAC25-720).

Facilities that have installed secondary wastewater treatment intended to achieve a BOD_5 and TSS monthly average of 30 mg/L are assumed to achieve an annual average total nitrogen effluent concentration of 18.7 mg/L and an annual average total phosphorus effluent concentration of 2.5 mg/L. To obtain the permitted design capacity (PDC) for the Lake Anna Environmental Services STP the following calculation is used:

Total Nitrogen PDC = Existing Flow x TN Concentration (mg/L) x 365 days per year x 8.3438 (conversion factor)

Total Phosphorus PDC = Existing Flow x TP Concentration (mg/L) x 365 days per year x 8.3438 (conversion factor)

Total Nitrogen PDC = 0.020 MGD x 18.7 mg/L x 365 x 8.3438
= 1139 lbs/year

Total Phosphorus PDC = 0.020 MGD x 2.5 mg/L x 365 x 8.3438
= 152 lbs/year

The Total Nitrogen and Total Phosphorus annual averages for the 0.099 MGD flow tier are then calculated using the following calculation:

Annual Average = Permitted Design Capacity ÷ 365 days per year ÷ 8.3438 (conversion factor) ÷ 0.099 MGD

Total Nitrogen Annual Average = 1139 pounds per year ÷ 365 days per year ÷8.3438 ÷ 0.099 MGD
= 3.8 mg/L

Total Phosphorus Annual Average = 152 pounds per year ÷ 365 days per year ÷8.3438 ÷ 0.099 MGD
= 0.5 mg/L

29. Additional Comments:
Previous Board Action(s): None

Public Comment: During the draft permit public comment period, DEQ-NRO received comments from 103 citizens and/or organizations via mail, email, and fax. Four additional sets of comments were received after the close of the comment period. At the close of the comment period, a total of 99 requests for a public hearing were received. The permittee, Lake Anna Environmental Services, Incorporated, submitted comments in support of the reissuance.

Comments received during the public notice, and staff responses, are provided in the Response to Comments Document which is located within the permit reissuance file.

Staff Comments: The Agency Director authorized the convening of a public hearing for the proposed permit reissuance on December 9, 2011. A majority of State Water Control Board Members did not request a meeting to review the agency decision. As such, staff shall proceed with making arrangements for conducting an informal fact-finding public hearing in accordance with Procedural Rule No. 1 and Section 62.1-44.15:02, the results of which will be presented for Board consideration at their regularly scheduled Spring 2012 Board meeting.

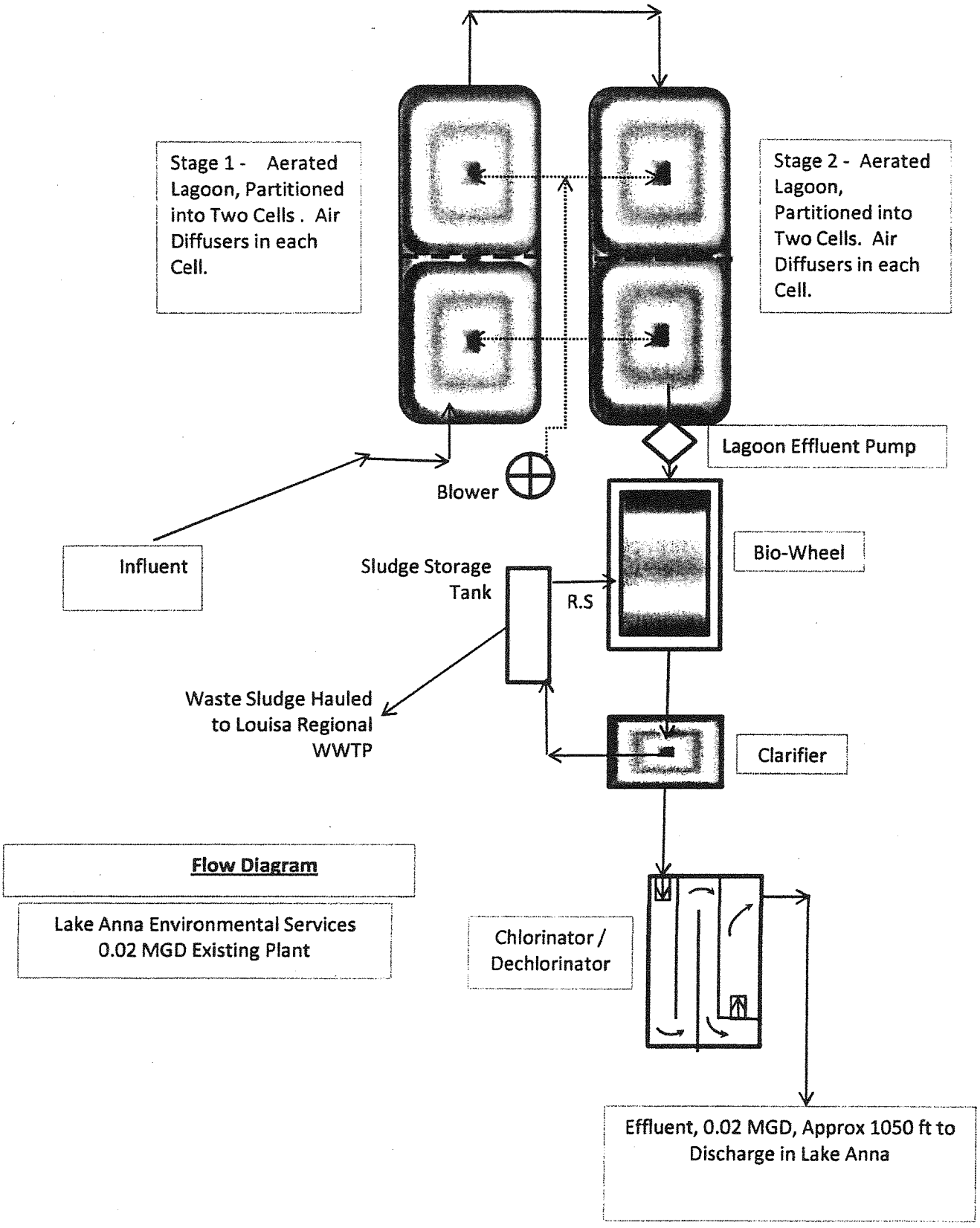
EPA Checklist: The checklist can be found in Attachment 6.

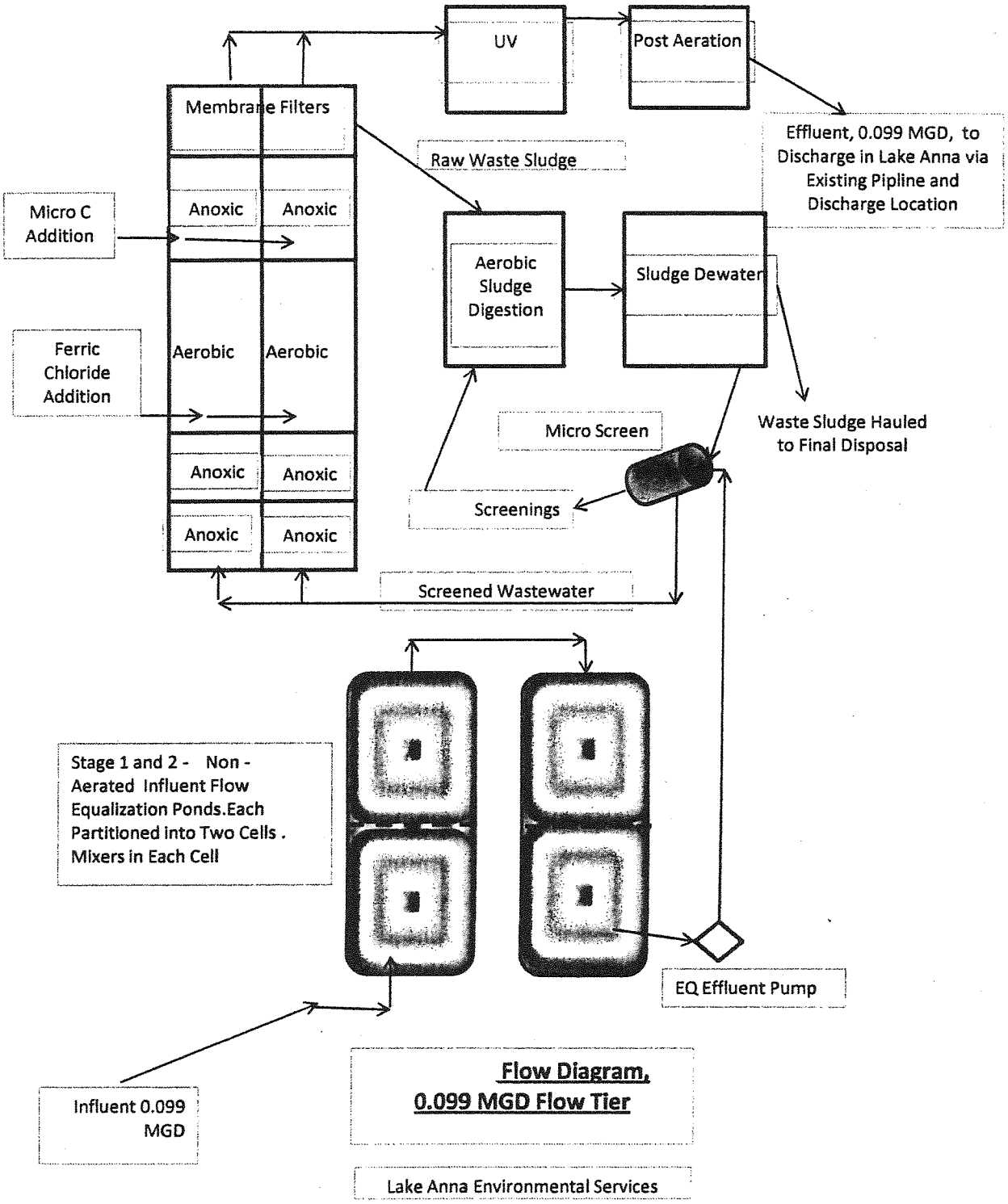
Fact Sheet Attachments – Table of Contents

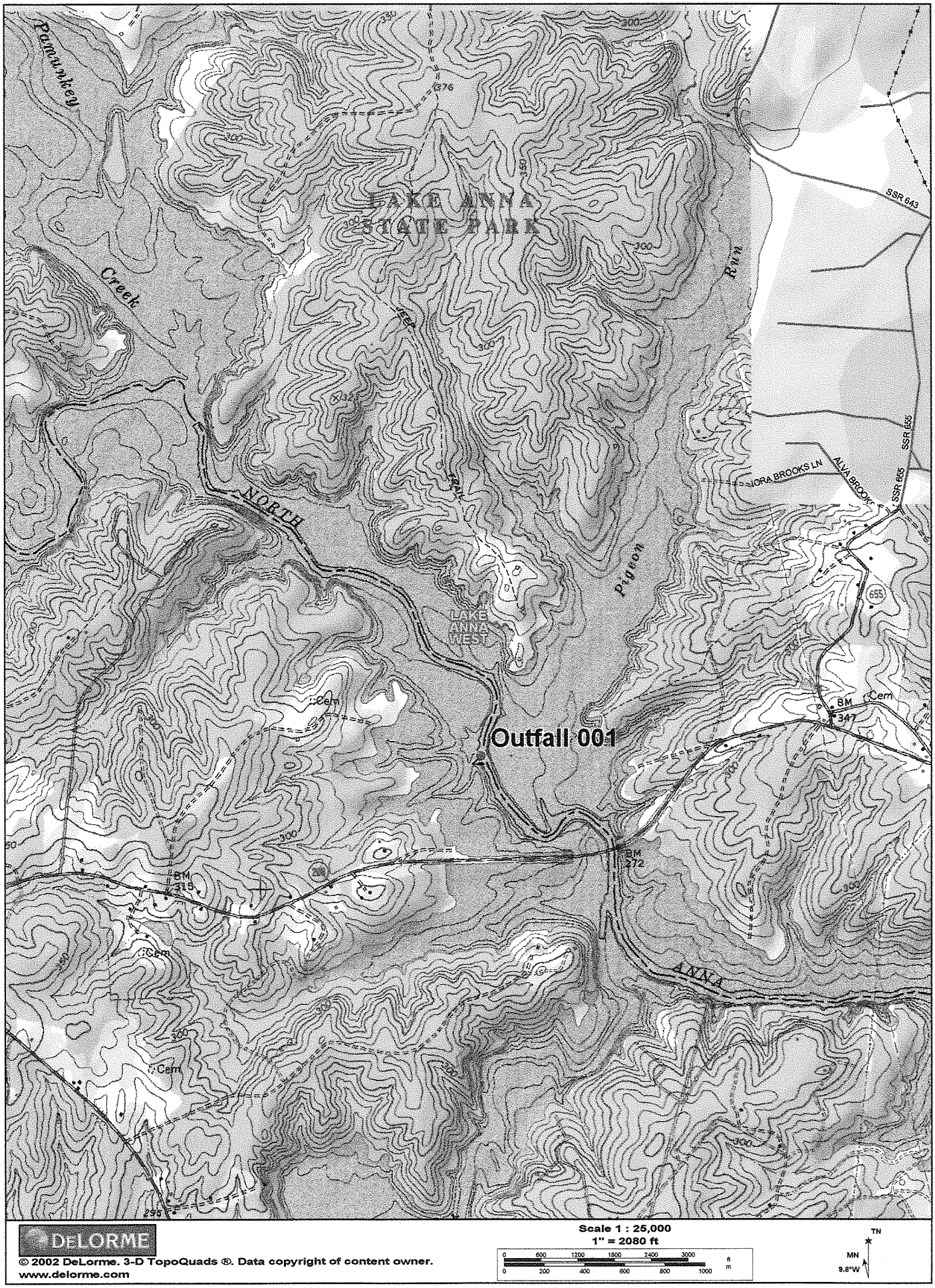
Lake Anna Environmental Services STP
VA0072079

2011 Reissuance

Attachment 1a	Facility Flow Diagram – 0.020 MGD
Attachment 1b	Facility Flow Diagram – 0.099 MGD (proposed)
Attachment 2	Topographic Map
Attachment 3	Site Visit Memorandum
Attachment 4a	Wasteload Allocation Analysis / Limit Derivation (0.020 MGD flow tier) - 2006
Attachment 4b	Ambient Data 90% Determination - 2011
Attachment 4c	Mixing Zone Memorandum
Attachment 4d	Wasteload Allocation Analysis / Limit Derivation (0.020 MGD flow tier) – 2011
Attachment 5	Public Notice
Attachment 6	EPA Checklist


Stage 1 - Aerated Lagoon, Partitioned into Two Cells . Air Diffusers in each Cell.
Stage 2 - Aerated Lagoon, Partitioned into Two Cells. Air Diffusers in each Cell.
Lagoon Effluent Pump
Blower
Influent
Sludge Storage Tank
R.S
Bio-Wheel
Waste Sludge Hauled to Louisa Regional WWTP
Clarifier
Flow Diagram
Lake Anna Environmental Services
0.02 MGD Existing Plant
Chlorinator / Dechlorinator
Effluent, 0.02 MGD, Approx 1050 ft to Discharge in Lake Anna


UV
Post Aeration
Membrane Filters
Effluent, 0.099 MGD, to Discharge in Lake Anna via Existing Pipline and Discharge Location
Raw Waste Sludge
Micro C Addition
Anoxic
Anoxic
Aerobic Sludge Digestion
Sludge Dewater
Ferric Chloride Addition
Aerobic
Aerobic
Waste Sludge Hauled to Final Disposal
Micro Screen
Anoxic
Anoxic
Screenings
Anoxic
Anoxic
Screened Wastewater
Stage 1 and 2 - Non - Aerated Influent Flow Equalization Ponds.Each Partitioned into Two Cells . Mixers in Each Cell
EQ Effluent Pump
Influent 0.099 MGD
Flow Diagram,
0.099 MGD Flow Tier
Lake Anna Environmental Services



Attachment 2
Page 1 of 1

MEMORANDUM

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court Woodbridge, VA 22193

SUBJECT: Pre-Application and Reissuance Site Visit
Lake Anna Environmental Services STP (VA0072079)

TO: Permit Reissuance File

FROM: Susan Mackert

DATE: March 3, 2011

A pre-application and reissuance site visit was performed on February 23, 2011. Information provided in the facility's permit reapplication package dated March 17, 2011, and May 2, 2011, was deemed representative of actual site conditions based on the earlier site visit.

The Lake Anna Environmental Services STP is a municipal wastewater treatment plant with a current design capacity of 0.020 MGD. With this reissuance the facility has requested an additional flow tier of 0.099 MGD. The facility treats domestic sewage from the Lake Anna Plaza area of Louisa County with a population of approximately 160 served.

The existing facility treats the wastewater using an aerated lagoon system comprised of two lagoons. Each lagoon is divided in to two cells (photos 1 – 2) by baffle curtains with diffused air being introduced into the lagoon bottom. Flow from the lagoon system is then pumped to a Bio-Wheel for additional treatment (photo 3). The Bio-Wheel provides an alternating air and water cycle for a fixed film process and aeration and mixing for the activated sludge process. Effluent from the Bio-Wheel then enters a clarifier prior to chlorine disinfection. The effluent is then dechlorinated with discharge via Outfall 001 to Lake Anna. The outfall is submerged and is located approximately 1055 feet from the shore at an approximate depth of 55 feet.

With the proposed expansion to 0.099 MGD, Lake Anna Environmental Services will construct a new treatment plant keeping the two existing lagoons to serve as flow equalization ponds and the existing outfall structure from the current facility. The new facility is proposed to have screening, a membrane bioreactor single sludge process with biological nutrient removal (BNR), ultraviolet disinfection and post aeration. There is no proposed change to the discharge location.

Photo 1. Lagoon one.

Photo 2. Lagoon two.

Photo 3. Bio-Wheel.

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Lake Anna Env Services 0.02 MGD Permit No.: VA0072079

Receiving Stream: Lake Anna

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	50 mg/L
90% Temperature (Annual) =	28.3 deg C
90% Temperature (Wet season) =	15.1 deg C
90% Maximum pH =	7.7 SU
10% Maximum pH =	6.6 SU
Tier Designation (1 or 2) =	1
Public Water Supply (PWS) Y/N? =	n
Trout Present Y/N? =	n
Early Life Stages Present Y/N? =	y

Stream Flows

1Q10 (Annual) =	0 MGD
7Q10 (Annual) =	0 MGD
30Q10 (Annual) =	0 MGD
1Q10 (Wet season) =	0 MGD
30Q10 (Wet season)	0 MGD
30Q5 =	0 MGD
Harmonic Mean =	0 MGD
Annual Average =	n/a MGD

Mixing Information

Annual - 1Q10 Mix =	100 %
- 7Q10 Mix =	100 %
- 30Q10 Mix =	100 %
Wet Season - 1Q10 Mix =	100 %
- 30Q10 Mix =	100 %

Effluent Information

Mean Hardness (as CaCO3) =	25 mg/L
90% Temp (Annual) =	28.3 deg C
90% Temp (Wet season) =	15.1 deg C
90% Maximum pH =	6.8 SU
10% Maximum pH =	6.6 SU
Discharge Flow =	0.02 MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile [C]	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin [C]	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	4.20E+01	2.59E+00	na	--	4.2E+01	2.6E+00	na	--	--	--	--	--	--	--	--	--	4.2E+01	2.6E+00	na	--
Ammonia-N (mg/l) (High Flow)	0	4.20E+01	6.06E+00	na	--	4.2E+01	6.1E+00	na	--	--	--	--	--	--	--	--	--	4.2E+01	6.1E+00	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	--
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Benzene [C]	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine [C]	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform [C]	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	8.2E-01	3.8E-01	na	--	8.2E-01	3.8E-01	na	--	--	--	--	--	--	--	--	--	8.2E-01	3.8E-01	na	--
Carbon Tetrachloride [C]	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane [C]	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane [C]	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpynfos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	1.8E+02	2.4E+01	na	--	1.8E+02	2.4E+01	na	--	--	--	--	--	--	--	--	--	1.8E+02	2.4E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	3.6E+00	2.7E+00	na	--	3.6E+00	2.7E+00	na	--	--	--	--	--	--	--	--	--	3.6E+00	2.7E+00	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD [C]	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	8.4E-03
DDE [C]	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.9E-03
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine [C]	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane [C]	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3.9E+02
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7E+03
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine [C]	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene [C]	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene [C]	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.6E-01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E
Hexachloroethane [C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	2.0E+01	2.3E+00	na	--	2.0E+01	2.3E+00	na	--	--	--	--	--	--	--	--	--	2.0E+01	2.3E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	5.6E+01	6.3E+00	na	4.6E+03	5.6E+01	6.3E+00	na	4.6E+03	--	--	--	--	--	--	--	--	5.6E+01	6.3E+00	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine [C]	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E
N-Nitrosodiphenylamine [C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine [C]	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total [C]	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

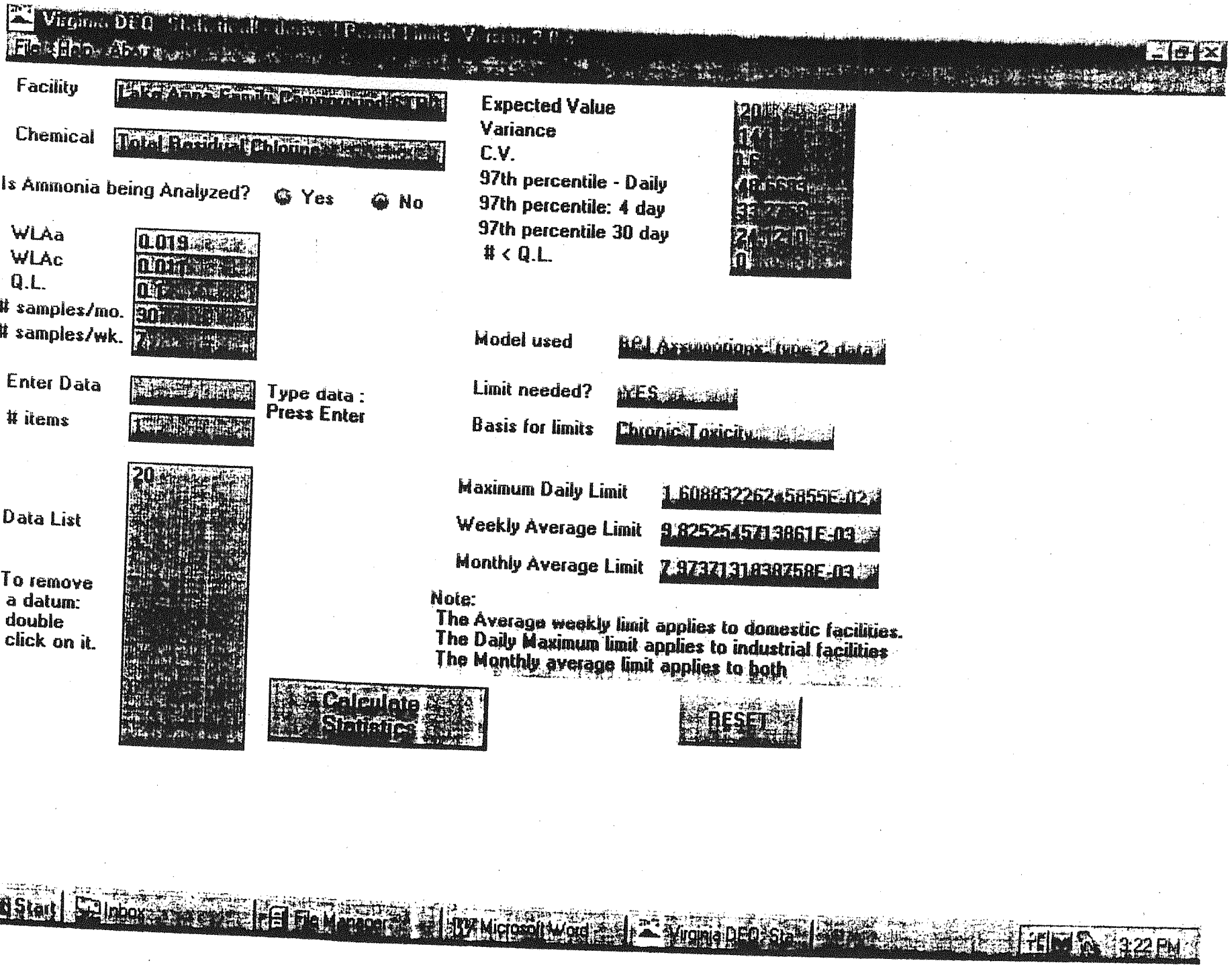
Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol [C]	0	5.8E+00	4.5E+00	na	8.2E+01	5.8E+00	4.5E+00	na	8.2E+01	--	--	--	--	--	--	--	--	5.8E+00	4.5E+00	na	8.2E+01
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	--	--	na	4.6E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	--	--	na	1.5E+01
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	1.1E+04
Silver	0	3.2E-01	--	na	--	3.2E-01	--	na	--	--	--	--	--	--	--	--	--	3.2E-01	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,1,2,2-Tetrachloroethane [C]	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	--	--	na	1.1E+02
Tetrachloroethylene [C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	--	--	na	6.3E+
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	7.5E-03
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	6.3E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	--	--	na	9.4E+02
1,1,2-Trichloroethane [C]	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	--	--	na	8.1E+02
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	--	--	na	6.5E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride [C]	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	--	--	na	6.1E+01
Zinc	0	3.6E+01	3.6E+01	na	6.9E+04	3.6E+01	3.6E+01	na	6.9E+04	--	--	--	--	--	--	--	--	3.6E+01	3.6E+01	na	6.9E+04

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	2.3E-01
Chromium III	1.4E+01
Chromium VI	6.4E+00
Copper	1.5E+00
Iron	na
Lead	1.4E+00
Manganese	na
Mercury	5.1E-02
Nickel	3.8E+00
Selenium	3.0E+00
Silver	1.3E-01
Zinc	1.4E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance


Facility
Chemical
Total Residual Chlorine
Is Ammonia being Analyzed?
Yes
No
WLAa
WLAc
Q.L.
samples/mo.
samples/wk.
0.019
30
Enter Data
items
Type data :
Press Enter
Data List
To remove a datum: double click on it.
Calculate Statistics
Expected Value
Variance
C.V.
97th percentile - Daily
97th percentile: 4 day
97th percentile 30 day
< Q.L.
Model used
Limit needed?
YES
Basis for limits
Chronic Toxicity
Maximum Daily Limit
1.608832262e5855E-02
Weekly Average Limit
9.82525457138615-03
Monthly Average Limit
7.973713183875&E-03
Note:
The Average weekly limit applies to domestic facilities.
The Daily Maximum limit applies to industrial facilities
The Monthly average limit applies to both
RESET
Start
Inbox
File Manager
Microsoft Word
Virginia DEQ Sta...
3:22 PM

Station	Water Shed Code	Collection Date Time	Temperature (C)	pH (SU)
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	19.9	7.2
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	19.9	7.2
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	19.4	7.2
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	19	7.2
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	18.8	7.1
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	17.6	7
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	17.3	7
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	16.4	7
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	15.5	6.9
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	15.1	6.8
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	14.3	6.7
8-NAR047.69	VAN-F07L	4/25/06 12:10 PM	14.2	6.6
8-NAR047.69	VAN-F07L	6/19/06 11:45 AM	26.6	7.1
8-NAR047.69	VAN-F07L	6/19/06 11:45 AM	26.5	7.1
8-NAR047.69	VAN-F07L	6/19/06 11:45 AM	26.4	7.1
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	29.1	7.3
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	29.1	7.3
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	29.1	7.3
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	29	7.3
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	28.9	7.2
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	28.9	7.1
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	28.9	7.1
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	28.9	7.1
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	28.9	7
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	28.8	6.9
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	28.5	6.6
8-NAR047.69	VAN-F07L	8/21/06 11:55 AM	28.4	6.6
8-NAR047.69	VAN-F07L	9/4/06 12:50 PM	26.3	7
8-NAR047.69	VAN-F07L	10/23/06 11:30 AM	18.5	7.1
8-NAR047.69	VAN-F07L	10/23/06 11:30 AM	18.5	7
8-NAR047.69	VAN-F07L	10/23/06 11:30 AM	18.5	7
8-NAR047.69	VAN-F07L	10/23/06 11:30 AM	18.5	7
8-NAR047.69	VAN-F07L	10/23/06 11:30 AM	18.5	7
8-NAR047.69	VAN-F07L	10/23/06 11:30 AM	18.5	7
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	18.5	7.2
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	18.5	7.2
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	18.4	7.2
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	18.4	7.2
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	16.3	6.9
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	15.8	6.8
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	14.4	6.7
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	13	6.5
8-NAR047.69	VAN-F07L	4/30/07 2:30 PM	12	6.5
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	27.9	7.2
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	27.2	7.2

Station	Water Shed Code	Collection Date Time	Temperature (C)	pH (SU)
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	26.1	7.1
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	25.8	7.1
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	25	7
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	24.3	7
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	23.1	7
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	22.4	6.9
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	21.4	6.7
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	20.9	6.7
8-NAR047.69	VAN-F07L	5/31/07 2:00 PM	20.6	6.8
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	27.7	7.2
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	27.4	7.1
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	26.8	7.1
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	26.7	7.1
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	26.7	7.1
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	26.6	7
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	26.6	6.8
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	25.9	6.6
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	25.7	6.6
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	25.3	6.5
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	24.7	6.5
8-NAR047.69	VAN-F07L	6/25/07 1:22 PM	24.6	6.6
8-NAR047.69	VAN-F07L	7/6/07 1:20 PM	28.1	7.1
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	29.2	7.5
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	29.2	7.5
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	28.8	7.4
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	28.6	7.4
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	28.5	7.3
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	28.4	7.2
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	27.6	7
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	27.3	7
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	27.2	7
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	27.1	7.1
8-NAR047.69	VAN-F07L	8/27/07 1:01 PM	27.1	7.1
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	26.4	7.4
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	26.3	7.3
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	26.3	7.2
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	26	7.1
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	26	7.1
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	26	7.1
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	25.9	7.1
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	25.9	7.1
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	25.9	7.1
8-NAR047.69	VAN-F07L	9/17/07 1:30 PM	25.9	7.1
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	22.7	8.2
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	22.7	8.2

Station	Water Shed Code	Collection Date Time	Temperature (C)	pH (SU)
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	22.6	8.4
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	22.3	8.2
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	22.1	8
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	22	7.9
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	21.7	7.7
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	21.5	7.6
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	21.5	7.5
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	21.5	7.3
8-NAR047.69	VAN-F07L	10/22/07 2:55 PM	21.5	7.2
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	18.6	7.4
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	17.9	7.4
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	17.7	7.3
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	17.5	7.2
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	17.5	7.3
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	17.2	7.2
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	16.9	7.1
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	16	7.1
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	14.7	6.9
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	14.2	6.7
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	14.1	6.7
8-NAR047.69	VAN-F07L	4/23/08 1:20 PM	13.7	6.6
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	20.2	7.5
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	20.2	7.4
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	20.1	7.4
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	20.1	7.3
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	19.9	7.3
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	19.7	7.3
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	19.6	7.2
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	19.5	7.1
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	18	6.7
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	16.5	6.5
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	16.1	6.4
8-NAR047.69	VAN-F07L	5/21/08 1:05 PM	16	6.3
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	29.7	7.9
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	29.7	8
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	29	7.9
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	29	7.8
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	28.9	7.7
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	28.5	7.4
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	26.9	7.1
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	25.7	6.9
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	24.8	6.7
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	24	6.5
8-NAR047.69	VAN-F07L	6/16/08 12:40 PM	23.4	6.4
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	31.3	7.8

Station	Water Shed Code	Collection Date Time	Temperature (C)	pH (SU)
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	31.1	7.8
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	30.5	8
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	30	7.8
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	30	7.6
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	29.9	7.4
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	29.9	7.4
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	29.7	7.3
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	28.8	7
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	28	6.7
8-NAR047.69	VAN-F07L	7/24/08 2:00 PM	28	6.5
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	29.5	8
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	28.7	8.1
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	28	8
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	27.8	7.8
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	27.7	7.6
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	27.7	7.5
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	27.6	7.3
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	27.6	7.2
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	27.4	7
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	27.4	6.8
8-NAR047.69	VAN-F07L	8/18/08 1:30 PM	27.3	6.7
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	20.4	7.4
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	20.2	7.5
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.9	7.5
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.6	7.3
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.6	7.3
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.5	7.2
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.5	7.2
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.4	7.1
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.4	7.1
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.4	7.1
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.3	7.1
8-NAR047.69	VAN-F07L	10/20/08 12:50 PM	19.3	7
8-NAR047.69	VAN-F07L	10/23/08 2:30 PM	19.2	7.6
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	20.5	7.3
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	20.5	7.3
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	20.3	7.3
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	19.4	7.2
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	16.9	7.2
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	16.8	7.2
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	15.8	7.2
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	14.6	7.1
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	14.4	7
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	13.7	7
8-NAR047.69	VAN-F07L	4/28/09 1:15 PM	13.5	6.9

Station	Water Shed Code	Collection Date Time	Temperature (C)	pH (SU)
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	20.5	7.3
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	20.5	7.3
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	20.5	7.3
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	20.5	7.3
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	20.4	7.3
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	19.3	7.2
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	18.7	7
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	18	6.9
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	17.5	6.8
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	17.2	6.8
8-NAR047.69	VAN-F07L	5/11/09 1:15 PM	17	6.7
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	27.2	7.8
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	27.1	8.1
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	27.1	8.1
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	27	8
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	26.6	7.5
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	25.1	7.2
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	24.4	7
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	23.9	6.9
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	23.3	6.6
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	23	6.5
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	22.6	6.5
8-NAR047.69	VAN-F07L	6/15/09 12:10 PM	21.1	6.5
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	28.5	7.2
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	28.5	7.3
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	28.4	7.3
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	28.2	7.3
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	28.1	7.3
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	28.1	7.3
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	27.9	7.2
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	27.5	6.8
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	27.2	6.6
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	27.1	6.6
8-NAR047.69	VAN-F07L	7/20/09 1:55 PM	26.5	6.4
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	30.6	7.5
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	30.1	7.6
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	29.9	7.7
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	29.7	7.8
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	29.5	7.7
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	29.4	7.5
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	29.1	7.4
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	28.9	7.3
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	28.9	7.1
8-NAR047.69	VAN-F07L	8/17/09 12:40 PM	28.4	6.7
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	25.9	8.4

Station	Water Shed Code	Collection Date Time	Temperature (C)	pH (SU)
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	25.7	8.3
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	25	7.8
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	24.8	7.7
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	24.7	7.6
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	24.7	7.6
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	24.7	7.5
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	24.6	7.3
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	24.5	7.1
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	24.4	6.9
8-NAR047.69	VAN-F07L	9/21/09 12:45 PM	24.4	6.8
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	17.2	7.3
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	17.2	7.3
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	17.1	7.3
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	17.1	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	17.1	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	17	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	17	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	17	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	16.9	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	16.9	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	16.9	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	16.6	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	16.2	7.2
8-NAR047.69	VAN-F07L	10/19/09 12:45 PM	16.1	7.2
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	18.1	7.5
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	18	7.5
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	18	7.5
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	17.9	7.5
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	17.9	7.5
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	17.8	7.5
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	16.3	7
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	13	6.7
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	12.9	6.5
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	12	6.5
8-NAR047.69	VAN-F07L	4/19/10 1:35 PM	11.6	6.5
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	22.1	7.5
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	22	7.6
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	21.9	7.6
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	21.3	7.9
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	20.7	7.2
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	20.5	7
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	20.4	6.8
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	20	6.8
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	19.8	6.7
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	19.3	6.5

Station	Water Shed Code	Collection Date Time	Temperature (C)	pH (SU)
8-NAR047.69	VAN-F07L	5/20/10 2:00 PM	18.9	6.5
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	30.5	8
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	30.4	8.1
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	30	8.2
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	29.7	8
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	29	7.4
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	28.3	7.1
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	27.4	6.8
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	27	6.5
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	26.1	6.3
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	25.5	6.3
8-NAR047.69	VAN-F07L	6/21/10 1:25 PM	25	6.3
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	30.6	7.6
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	30.6	7.7
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	30.5	7.7
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	30.5	7.7
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	30.4	7.5
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	30.3	7.4
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	30.2	7.2
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	29.8	6.8
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	29.4	6.5
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	29.1	6.3
8-NAR047.69	VAN-F07L	7/21/10 1:16 PM	28.8	6.3
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	30.2	7.4
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29.8	7.3
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29.7	7.2
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29.5	7.1
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29.5	7
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29.4	7
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29.4	6.9
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29.3	6.9
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29.3	6.8
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	29	6.7
8-NAR047.69	VAN-F07L	8/16/10 12:40 PM	28.9	6.5
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	26.3	8.3
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	26.3	8.4
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	25.7	8.2
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	25.5	7.9
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	25.4	7.8
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	25.4	7.5
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	25.3	7.3
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	25.3	7.2
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	25.3	7.1
8-NAR047.69	VAN-F07L	9/21/10 2:15 PM	25.2	7
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	20	7

Station	Water Shed Code	Collection Date Time	Temperature (C)	pH (SU)
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.9	7
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.5	7
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.5	6.9
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.5	6.9
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.4	6.8
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.4	6.8
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.4	6.7
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.3	6.7
8-NAR047.69	VAN-F07L	10/18/10 1:25 PM	19.3	6.7
		90% =	29.46	7.8

Memorandum

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Office of Water Permit Programs — 629 East Main Street, Richmond, VA

SUBJECT: Lake Anna Family Campground (VA0072079)

TO: C. Kemper Loyd

FROM: Jon van Soestbergen

DATE: February 27, 2001

COPIES: Joseph Winfield, M. Dale Phillips

Per your request of February 20, I have attempted to establish mixing zone boundaries and dilution ratios for the subject discharge to Lake Anna. The attempt was made using the CORMIX1 model, which produced inconclusive and unreliable results. Therefore, it is recommended that permit limits be established in accordance with Guidance Memo No. 00-2011; *Guidance on Preparing VPDES Permit Limits*, which disallows mixing zones unless the discharger provides actual physical/chemical data to demonstrate acceptable conditions both within the mixing zone and the lake as a whole (pp.30-31).

In the absence of any such data from the discharger, "criteria end-of-pipe" for toxic parameters, and secondary treatment-based (i.e. 30 mg/l) limits for BOD_5 are recommended for this discharge.

If you have any questions or require additional information, please do not hesitate to contact me at (804) 698-4117.

e:\docs\wp\models\lake anna family campground.doc

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Lake Anna Environmental Services STP Permit No.: VA0072079

Receiving Stream: Lake Anna Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =		mg/L
90% Temperature (Annual) =		deg C
90% Temperature (Wet season) =		deg C
90% Maximum pH =		SU
10% Maximum pH =		SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	50	mg/L
90% Temp (Annual) =	25	deg C
90% Temp (Wet season) =		deg C
90% Maximum pH =	7.46	SU
10% Maximum pH =		SU
Discharge Flow =	0.02	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	5	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.9E+02**
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.3E+00**
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.5E+00**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	**3.0E+00**	**--**	**na**	**5.0E-04**
Ammonia-N (mg/l) (Yearly)	0	2.11E+01	2.30E+00	na	--	2.11E+01	2.30E+00	na	--	--	--	--	--	--	--	--	--	**2.11E+01**	**2.30E+00**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	2.11E+01	4.51E+00	na	--	2.11E+01	4.51E+00	na	--	--	--	--	--	--	--	--	--	**2.11E+01**	**4.51E+00**	**na**	**--**
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+04**
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.4E+02**
Arsenic	o	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+02**
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E-03**
Benzo (a) anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (b) fluoranthene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (k) fluoranthene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (a) pyrene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Bis2-Chloroethyl Ether[C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+00**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.5E+04**
Bis 2-Ethylhexyl Phthalate[C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+01**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+03**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+03**
Cadmium	0	1.8E+00	6.6E-01	na	--	1.8E+00	6.6E-01	na	--	--	--	--	--	--	--	--	--	**1.8E+00**	**6.6E-01**	**na**	**--**
Carbon Tetrachloride[C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	**2.4E+00**	**4.3E-03**	**na**	**8.1E-03**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	**8.6E+05**	**2.3E+05**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**na**	**--**
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	--	--	na	1.3E+02
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	--	--	na	1.6E+03
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	3.2E+02	4.2E+01	na	--	--	--	--	--	--	--	--	--	3.2E+02	4.2E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene[C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	--	--	na	1.8E-02
Copper	0	7.0E+00	5.0E+00	na	--	7.0E+00	5.0E+00	na	--	--	--	--	--	--	--	--	--	7.0E+00	5.0E+00	na	--
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	1.6E+04
DDD[C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	--	--	na	3.1E-03
DDE[C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	--	--	na	2.2E-03
DDT[C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	2.2E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	1.7E-01	1.7E-01	na	--
Dibenz(a,h)anthracene[C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	--	--	na	1.3E+03
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	--	--	na	9.6E+02
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	--	--	na	1.9E+02
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	--	--	na	2.8E-01
Dichlorobromomethane[C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	--	--	na	1.7E+02
1,2-Dichloroethane[C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	--	--	na	7.1E+03
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	--	--	na	1.0E+04
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	--	--	na	2.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	--	--	na	1.5E+02
1,3-Dichloropropene[C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	--	--	na	2.1E+02
Dieldrin[C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	5.4E-04
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	--	--	na	4.4E+04
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	--	--	na	8.5E+02
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	--	--	na	1.1E+06
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	--	--	na	4.5E+03
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	--	--	na	2.8E+02
2,4-Dinitrotoluene[C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	--	--	na	3.4E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	--	--	na	5.1E-08
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	--	--	na	2.0E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	8.9E+01
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	--	--
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	6.0E-02
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	--	--	na	3.0E-01

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	--	--	na	2.1E+03
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	--	--	na	1.4E+02
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	--	--	na	5.3E+03
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	7.9E-04
Heptachlor Epoxide [C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	3.9E-04
Hexachlorobenzene [C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	--	--	na	2.9E-03
Hexachlorobutadiene [C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	--	--	na	1.8E+02
Hexachlorocyclohexane Alpha-BHC [C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	--	--	na	4.9E-02
Hexachlorocyclohexane Beta-BHC [C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	--	--	na	1.7E-01
Hexachlorocyclohexane Gamma-BHC [C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	9.5E-01	--	na	1.8E+00
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	--	--	na	1.1E+03
Hexachloroethane [C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	--	--	na	3.3E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	--	--	na	1.8E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone [C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	--	--	na	9.6E+03
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	4.9E+01	5.6E+00	na	--	4.9E+01	5.6E+00	na	--	--	--	--	--	--	--	--	--	4.9E+01	5.6E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	--	--	1.4E+00	7.7E-01	--	--	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	--	--
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	--	--	na	1.5E+03
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	--	--	na	5.9E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.0E+02	1.1E+01	na	4.6E+03	--	--	--	--	--	--	--	--	1.0E+02	1.1E+01	na	4.6E+03
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	--	--	na	6.9E+02
N-Nitrosodimethylamine [C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	--	--	na	3.0E+01
N-Nitrosodiphenylamine [C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	--	--	na	6.0E+01
N-Nitrosodi-n-propylamine [C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	--	--	na	5.1E+00
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	6.6E+00	na	--
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB Total [C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	--	1.4E-02	na	6.4E-04
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	3.0E+01	7.7E-03	5.9E-03	na	3.0E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	3.0E+01
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	--	--	na	8.6E+05
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	1.0E+00	--	na	--	1.0E+00	--	na	--	--	--	--	--	--	--	--	--	**1.0E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene[C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene[C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	6.5E+01	6.6E+01	na	2.6E+04	6.5E+01	6.6E+01	na	2.6E+04	--	--	--	--	--	--	--	--	**6.5E+01**	**6.6E+01**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	3.9E-01
Chromium III	2.5E+01
Chromium VI	6.4E+00
Copper	2.8E+00
Iron	na
Lead	3.4E+00
Manganese	na
Mercury	4.6E-01
Nickel	6.8E+00
Selenium	3.0E+00
Silver	4.2E-01
Zinc	2.6E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

DMR QA/QC

Permit #:VA0072079 **Facility: Lake Anna Environmental Services STP**

Due	Outfall	Parameter Description	CONC MAX	Lim Max
10-Oct-06	001	PH	6.4	9.0
10-Nov-06	001	PH	NULL	9.0
10-Dec-06	001	PH	6.2	9.0
10-Jan-07	001	PH	NULL	9.0
10-Feb-07	001	PH	NULL	9.0
10-Mar-07	001	PH	NULL	9.0
10-Apr-07	001	PH	7.2	9.0
10-May-07	001	PH	6.7	9.0
10-Jun-07	001	PH	NULL	9.0
10-Jul-07	001	PH	7.0	9.0
10-Aug-07	001	PH	NULL	9.0
10-Sep-07	001	PH	7.8	9.0
10-Oct-07	001	PH	7.5	9.0
10-Nov-07	001	PH	NULL	9.0
10-Dec-07	001	PH	7.3	9.0
10-Jan-08	001	PH	NULL	9.0
10-Feb-08	001	PH	NULL	9.0
10-Mar-08	001	PH	7.4	9.0
10-Apr-08	001	PH	NULL	9.0
10-May-08	001	PH	7.7	9.0
10-Jun-08	001	PH	7.2	9.0
10-Jul-08	001	PH	6.9	9.0
10-Aug-08	001	PH	NULL	9.0
10-Sep-08	001	PH	6.8	9.0
10-Oct-08	001	PH	6.8	9.0
10-Nov-08	001	PH	NULL	9.0
10-Dec-08	001	PH	6.7	9.0
10-Jan-09	001	PH	6.8	9.0
10-Feb-09	001	PH	NULL	9.0
10-Mar-09	001	PH	6.8	9.0

DMR QA/QC (Continued)

Permit #: VA0072079 Facility: Lake Anna Environmental Services STP

Due	Outfall	Parameter Description	CONC MAX	Lim Max
10-Apr-09	001	PH	NULL	9.0
10-May-09	001	PH	6.8	9.0
10-Jun-09	001	PH	NULL	9.0
10-Jul-09	001	PH	6.8	9.0
10-Aug-09	001	PH	6.8	9.0
10-Sep-09	001	PH	6.9	9.0
10-Oct-09	001	PH	6.8	9.0
10-Nov-09	001	PH	6.8	9.0
10-Dec-09	001	PH	6.8	9.0
10-Jan-10	001	PH	6.8	9.0
10-Feb-10	001	PH	6.7	9.0
10-Mar-10	001	PH	6.8	9.0
10-Apr-10	001	PH	6.7	9.0
10-May-10	001	PH	6.8	9.0
10-Jun-10	001	PH	6.8	9.0
10-Jul-10	001	PH	6.6	9.0
10-Aug-10	001	PH	6.8	9.0
10-Sep-10	001	PH	NULL	9.0
10-Oct-10	001	PH	NULL	9.0
10-Nov-10	001	PH	6.8	9.0
10-Dec-10	001	PH	NULL	9.0
10-Jan-11	001	PH	6.17	9.0
10-Feb-11	001	PH	6.12	9.0
10-Mar-11	001	PH	7.69	9.0
10-Apr-11	001	PH	NULL	9.0
10-May-11	001	PH	7.27	9.0
		90% pH =	**7.46 S.U.**	
		10% pH =	**6.52 S.U.**	

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Facility = Lake Anna Environmental Services STP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 21
WLAc = 2.3
Q.L. = 0.2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 4.64064121485751
Average Weekly limit = 4.64064121485752
Average Monthly LImit = 4.64064121485752

The data are:

9

8/25/2011 9:39:21 AM

Facility = Lake Anna Environmental Services STP
Chemical = Chlorine
Chronic averaging period = 30
WLAa = 0.019
WLAc = 0.011
Q.L. = 0.1
# samples/mo. = 28
# samples/wk. = 7

Summary of Statistics:

observations = 1
Expected Value = .2
Variance = .0144
C.V. = 0.6
97th percentile daily values = .486683
97th percentile 4 day average = .332758
97th percentile 30 day average= .241210
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 0.019
Average Weekly limit = 1.16034369282885E-02
Average Monthly LImit = 9.47327018453872E-03

The data are:

0.2

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Louisa County, Virginia.

PUBLIC COMMENT PERIOD: October 14, 2011 to 5:00 p.m. on November 14, 2011

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Lake Anna Environmental Services, 200 Lake Front Drive, Suite 103, Lake Anna, VA 23117, VA0072079

NAME AND ADDRESS OF FACILITY: Lake Anna Environmental Services STP, Lake Front Drive, Lake Anna, VA 23117

PROJECT DESCRIPTION: Lake Anna Environmental Services has applied for a reissuance of a permit for the private Lake Anna Environmental Services STP. The applicant proposes to release treated sewage wastewaters from residential areas at a rate of 0.020 million gallons per day into a water body. The reissuance process would allow an additional flow tier of 0.099 million gallons per day. Solids from the treatment process will be transported to the Louisa Regional Wastewater Treatment Plant for disposal. The facility proposes to release the treated sewage in Lake Anna in Louisa County in the York River watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, BOD, CBOD, Total Suspended Solids, Dissolved Oxygen, Ammonia, Total Residual Chlorine, *E. coli,* Total Kjeldahl Nitrogen, Total Nitrogen, and Total Phosphorus.

The facility is subject to the requirements of 9VAC25-820 at the 0.099 MGL flow tier, and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the documents at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Susan Mackert
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3853 E-mail: susan.mackert@deq.virginia.gov Fax: (703) 583-3821

Revised 2/2003

State "Transmittal Checklist" to Assist in Targeting
Municipal and Industrial Individual NPDES Draft Permits for Review

Part I. State Draft Permit Submission Checklist

In accordance with the MOA established between the Commonwealth of Virginia and the United States Environmental Protection Agency, Region III, the Commonwealth submits the following draft National Pollutant Discharge Elimination System (NPDES) permit for Agency review and concurrence.

Facility Name:	Lake Anna Environmental Services STP
NPDES Permit Number:	VA0072079
Permit Writer Name:	Susan Mackert
Date:	July 6, 2011

Major [ ] **Minor** [X] **Industrial** [ ] **Municipal** [X]

I.A. Draft Permit Package Submittal Includes:	**Yes**	**No**	**N/A**
1. Permit Application?	X		
2. Complete Draft Permit (for renewal or first time permit – entire permit, including boilerplate information)?	X		
3. Copy of Public Notice?	X		
4. Complete Fact Sheet?	X		
5. A Priority Pollutant Screening to determine parameters of concern?	X		
6. A Reasonable Potential analysis showing calculated WQBELs?	X		
7. Dissolved Oxygen calculations?		X	
8. Whole Effluent Toxicity Test summary and analysis?			X
9. Permit Rating Sheet for new or modified industrial facilities?			X

I.B. Permit/Facility Characteristics	**Yes**	**No**	**N/A**
1. Is this a new, or currently unpermitted facility?		X	
2. Are all permissible outfalls (including combined sewer overflow points, non-process water and storm water) from the facility properly identified and authorized in the permit?	X		
3. Does the fact sheet **or** permit contain a description of the wastewater treatment process?	X		
4. Does the review of PCS/DMR data for at least the last 3 years indicate significant non-compliance with the existing permit?		X	
5. Has there been any change in streamflow characteristics since the last permit was developed?		X	
6. Does the permit allow the discharge of new or increased loadings of any pollutants?	X		
7. Does the fact sheet **or** permit provide a description of the receiving water body(s) to which the facility discharges, including information on low/critical flow conditions and designated/existing uses?	X		
8. Does the facility discharge to a 303(d) listed water?	X		
a. Has a TMDL been developed and approved by EPA for the impaired water?		X	
b. Does the record indicate that the TMDL development is on the State priority list and will most likely be developed within the life of the permit?		X	
c. Does the facility discharge a pollutant of concern identified in the TMDL or 303(d) listed water?		X	
9. Have any limits been removed, or are any limits less stringent, than those in the current permit?		X	
10. Does the permit authorize discharges of storm water?		X	

I.B. Permit/Facility Characteristics – cont.	Yes	No	N/A
11. Has the facility substantially enlarged or altered its operation or substantially increased its flow or production?		X	
12. Are there any production-based, technology-based effluent limits in the permit?		X	
13. Do any water quality-based effluent limit calculations differ from the State's standard policies or procedures?		X	
14. Are any WQBELs based on an interpretation of narrative criteria?		X	
15. Does the permit incorporate any variances or other exceptions to the State's standards or regulations?		X	
16. Does the permit contain a compliance schedule for any limit or condition?		X	
17. Is there a potential impact to endangered/threatened species or their habitat by the facility's discharge(s)?		X	
18. Have impacts from the discharge(s) at downstream potable water supplies been evaluated?	X		
19. Is there any indication that there is significant public interest in the permit action proposed for this facility?	X		
20. Have previous permit, application, and fact sheet been examined?	X		

Part II. NPDES Draft Permit Checklist

Region III NPDES Permit Quality Checklist – for POTWs

II.A. Permit Cover Page/Administration	**Yes**	**No**	**N/A**
1. Does the fact sheet or permit describe the physical location of the facility, including latitude and longitude (not necessarily on permit cover page)?	X		
2. Does the permit contain specific authorization-to-discharge information (from where to where, by whom)?	X		

II.B. Effluent Limits – General Elements	**Yes**	**No**	**N/A**
1. Does the fact sheet describe the basis of final limits in the permit (e.g., that a comparison of technology and water quality-based limits was performed, and the most stringent limit selected)?	X		
2. Does the fact sheet discuss whether "antibacksliding" provisions were met for any limits that are less stringent than those in the previous NPDES permit?	X		

II.C. Technology-Based Effluent Limits (POTWs)	**Yes**	**No**	**N/A**
1. Does the permit contain numeric limits for ALL of the following: BOD (or alternative, e.g., CBOD, COD, TOC), TSS, and pH?	X		
2. Does the permit require at least 85% removal for BOD (or BOD alternative) and TSS (or 65% for equivalent to secondary) consistent with 40 CFR Part 133?	X		
a. If no, does the record indicate that application of WQBELs, or some other means, results in more stringent requirements than 85% removal or that an exception consistent with 40 CFR 133.103 has been approved?			X
3. Are technology-based permit limits expressed in the appropriate units of measure (e.g., concentration, mass, SU)?	X		
4. Are permit limits for BOD and TSS expressed in terms of both long term (e.g., average monthly) and short term (e.g., average weekly) limits?	X		
5. Are any concentration limitations in the permit less stringent than the secondary treatment requirements (30 mg/l BOD5 and TSS for a 30-day average and 45 mg/l BOD5 and TSS for a 7-day average)?		X	
a. If yes, does the record provide a justification (e.g., waste stabilization pond, trickling filter, etc.) for the alternate limitations?			X

II.D. Water Quality-Based Effluent Limits	**Yes**	**No**	**N/A**
1. Does the permit include appropriate limitations consistent with 40 CFR 122.44(d) covering State narrative and numeric criteria for water quality?	X		
2. Does the fact sheet indicate that any WQBELs were derived from a completed and EPA approved TMDL?	X		
3. Does the fact sheet provide effluent characteristics for each outfall?	X		
4. Does the fact sheet document that a "reasonable potential" evaluation was performed?	X		
a. If yes, does the fact sheet indicate that the "reasonable potential" evaluation was performed in accordance with the State's approved procedures?	X		
b. Does the fact sheet describe the basis for allowing or disallowing in-stream dilution or a mixing zone?	X		
c. Does the fact sheet present WLA calculation procedures for all pollutants that were found to have "reasonable potential"?	X		
d. Does the fact sheet indicate that the "reasonable potential" and WLA calculations accounted for contributions from upstream sources (i.e., do calculations include ambient/background concentrations)?	X		
e. Does the permit contain numeric effluent limits for all pollutants for which "reasonable potential" was determined?	X		

II.D. Water Quality-Based Effluent Limits – cont.	Yes	No	N/A
5. Are all final WQBELs in the permit consistent with the justification and/or documentation provided in the fact sheet?	X		
6. For all final WQBELs, are BOTH long-term AND short-term effluent limits established?	X		
7. Are WQBELs expressed in the permit using appropriate units of measure (e.g., mass, concentration)?	X		
8. Does the record indicate that an "antidegradation" review was performed in accordance with the State's approved antidegradation policy?	X		

II.E. Monitoring and Reporting Requirements	Yes	No	N/A
1. Does the permit require at least annual monitoring for all limited parameters and other monitoring as required by State and Federal regulations?	X		
a. If no, does the fact sheet indicate that the facility applied for and was granted a monitoring waiver, AND, does the permit specifically incorporate this waiver?			X
2. Does the permit identify the physical location where monitoring is to be performed for each outfall?	X		
3. Does the permit require at least annual influent monitoring for BOD (or BOD alternative) and TSS to assess compliance with applicable percent removal requirements?		X	
4. Does the permit require testing for Whole Effluent Toxicity?		X	

II.F. Special Conditions	Yes	No	N/A
1. Does the permit include appropriate biosolids use/disposal requirements?	X		
2. Does the permit include appropriate storm water program requirements?			X
3. If the permit contains compliance schedule(s), are they consistent with statutory and regulatory deadlines and requirements?			X
4. Are other special conditions (e.g., ambient sampling, mixing studies, TIE/TRE, BMPs, special studies) consistent with CWA and NPDES regulations?			X
5. Does the permit allow/authorize discharge of sanitary sewage from points other than the POTW outfall(s) or CSO outfalls [i.e., Sanitary Sewer Overflows (SSOs) or treatment plant bypasses]?		X	
6. Does the permit authorize discharges from Combined Sewer Overflows (CSOs)?		X	
a. Does the permit require implementation of the "Nine Minimum Controls"?			X
b. Does the permit require development and implementation of a "Long Term Control Plan"?			X
c. Does the permit require monitoring and reporting for CSO events?			X
7. Does the permit include appropriate Pretreatment Program requirements?	X		

II.G. Standard Conditions	Yes	No	N/A
1. Does the **permit** contain all 40 CFR 122.41 standard conditions or the State equivalent (or more stringent) conditions?	X		

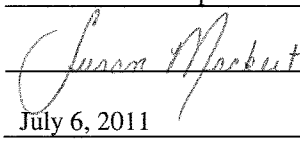
List of Standard Conditions – 40 CFR 122.41

Duty to comply	Property rights	Reporting Requirements
Duty to reapply	Duty to provide information	Planned change
Need to halt or reduce activity	Inspections and entry	Anticipated noncompliance
not a defense	Monitoring and records	Transfers
Duty to mitigate	Signatory requirement	Monitoring reports
Proper O & M	Bypass	Compliance schedules
Permit actions	Upset	24-Hour reporting
		Other non-compliance

2. Does the permit contain the additional standard condition (or the State equivalent or more stringent conditions) for POTWs regarding notification of new introduction of pollutants and new industrial users [40 CFR 122.42(b)]?	X		

Part III. Signature Page

Based on a review of the data and other information submitted by the permit applicant, and the draft permit and other administrative records generated by the Department/Division and/or made available to the Department/Division, the information provided on this checklist is accurate and complete, to the best of my knowledge.

Name	Susan Mackert
Title	Environmental Specialist II Senior
Signature	
Date	July 6, 2011